

# Configuring Video and Audio Devices for Use with Polycom PVX



You can select from a number of different audio and video input devices to use with your Polycom® PVX™ application, version 8.0.1 or later.

This document lists the advantages and disadvantages of various devices so you can choose the correct one for your environment. It also describes the factors you should consider when selecting a video input device.

Once you have selected your audio and video devices, you need to configure them for optimum performance. This document describes how to use the PVX user interface to specify the audio and video device settings. If you plan on using PVX with the Computer Calling Kit for SoundStation2™ and SoundStation2W™, this document also describes how to configure the PVX settings for use with this kit.

The final section of this document provides information on how to resolve audio and video issues.

## Choosing and Configuring Video Input Devices

Polycom PVX supports a wide variety of video input devices. The quality of your PVX video largely depends on the quality and design of your video input device. These common devices have been tested with Polycom PVX version 8.0.1 or later:

- AVerMedia AVerTV GO 007 FM Plus PCI
- Creative WebCam Live! Motion
- Creative WebCam Live! Pro
- GlobalMedia iREZ KD 1394
- GlobalMedia iREZ K2 USB 2.0
- Logitech QuickCam Pro 4000
- LogiTech QuickCam for Notebooks Pro
- Logitech QuickCam Pro 5000
- Logitech QuickCam Fusion
- Logitech QuickCam Orbit MP
- Veo Velocity Connect
- V-Stream TV2800 (V-Stream Xpert DVD Maker USB 2.0)

## Determining the CPU Load for Your System

Polycom PVX is a CPU-intensive application. It was originally designed to accommodate the CPU requirements of third-party video capture devices, so that the total CPU load results in acceptable performance. As modern devices have become more capable in resolution and supported features, they have sometimes also become more CPU intensive. Using some of these devices can cause the total CPU load to surpass optimal levels. For these CPU-intensive devices, you can adjust the PVX CPU requirements to accommodate the device's requirements.

The following table lists the CPU load levels for some of the video input devices supported by PVX. You will need this information to configure your device. If your input device is not listed here, refer to the information which follows this table.

This device...		Uses this CPU load level...
AVerMedia AVerTV GO 007 FM Plus PCI		Low
Creative WebCam Live! Motion		High
Creative WebCam Live! Pro		Medium
GlobalMedia iREZ KD 1394		Low
GlobalMedia iREZ K2 USB 2.0 Note that the GlobalMedia iREZ K2 USB 2.0 camera was tested using quality setting B (the default setting). Higher quality settings offer additional image processing capability, but the increased load on the CPU may adversely affect system performance.		Medium
Logitech QuickCam for Notebooks Pro	P/N 961398-04030 Driver version 9.5.0	High
	P/N 961240-04030 Driver version 8.4.1	Medium
Logitech QuickCam Pro 4000	Driver version 7.3.0	Low
	Driver version 8.4.8	Low
	Driver version 9.0.2	Medium
Logitech QuickCam Pro 5000	Driver version 9.0.2	Low
Logitech QuickCam Fusion Note that, as of driver version 9.0.2, the Logitech QuickCam Fusion audio echo canceller appears to add delay and introduce audible artifacts into the audio.	Driver version 9.0.2	Medium <b>Note:</b> If the Logitech Audio Echo Canceller (AEC) is enabled, select High.

This device...		Uses this CPU load level...
Logitech QuickCam Orbit MP	Driver version 9.0.2	Medium
Veo Velocity Connect		Medium
V-Stream TV2800 (V-Stream Xpert DVD Maker USB 2.0)		Low

If your device is not listed, you can calculate the CPU load level yourself.

#### To determine your video input device's CPU load:

1. With no other applications running, start Polycom PVX. Make sure that there is no call in progress and that you can see video.
2. Right-click an empty area in the Windows Task Bar, and choose **Task Manager**.
3. Click the Performance tab, and make a note of the **CPU Usage**, expressed as a percentage of the total CPU.
4. To determine the CPU usage in MHz, multiply the system's CPU speed by the CPU Usage.
5. Use this table to determine the level of CPU usage:

CPU Usage	CPU Load Level	Description
< 200 MHz	Low	The device's driver load is equivalent to the load for devices supported in earlier versions of PVX. For example: A webcam that captures 320 x 240 video or a PCI video capture card.
200 - 600 MHz	Medium	Newer devices that support VGA resolutions and higher usually compress the video. The device drivers must then decode the video before sending it to PVX, which increases the CPU load. For example: A webcam that captures 640 x 480 at 30 fps or a DV input device, such as a digital camcorder or webcam that supports Firewire/IEEE-1394.
> 600 MHz	High	The device is using CPU-intensive features, such as face tracking, video special effects, wide-angle lens distortion correction, or audio echo cancellation.

For example, suppose your 2.8 GHz computer is running at just over 25% of the CPU with no call in progress. Determine the CPU load level as follows:

$2.8 \text{ GHz} \times 25\% = 700 \text{ MHz}$  of CPU resources in use

Referring to the table, you see that the camera driver's load is **High**.

## Specifying Advanced Video Properties

To optimize the video from your PVX, you need to correctly specify the PVX video settings. Before you start, you need to know the CPU load level of your video input device. Refer to [Determining the CPU Load for Your System](#) for more information.

### To specify the advanced video properties:

1. From the PVX Main page, select **Setup > Video > Advanced**.
2. Configure these settings:

Setting	Description
<b>Enable VGA People Encoding</b>	Select if your computer uses less than 15% of the CPU when PVX is running and no call is in progress. Clear if your computer uses more than 15% of the CPU while not in a call.
<b>Video Quality</b>	Select <b>Smoother Motion</b> to make video motion appear smooth, even though the picture may lose detail. Select this option when the call includes participants moving around the room and no shared documents.  Select <b>Sharper Image</b> for a sharp, clear picture, even though the motion may not be as smooth. Select this option when all participants are seated and you need to show slides or another type of document during the call.
<b>Enable VGA 30 frames per second</b>	Clear this setting in most cases. Select if your device can support VGA at 30 frames per second while maintaining a low CPU load. Most cameras are <b>not</b> capable of doing this. Supported video input devices with this capability include: <ul style="list-style-type: none"> <li>• PCI video capture cards</li> <li>• AVerMedia AVerTV GO 007 FM Plus PCI</li> <li>• GlobalMedia iREZ K2 USB 2.0</li> <li>• V-Stream TV2800 (V-Stream Xpert DVD Maker USB 2.0)</li> </ul>
<b>For the camera you have selected, specify the camera driver's load on the system</b>	Select <b>Low</b> if the device's driver has little impact on the total CPU load. Select <b>Medium</b> if the device's driver moderately increases the CPU load. Select <b>High</b> if the device's driver significantly increases the CPU load. Refer to <a href="#">Determining the CPU Load for Your System</a> for more information.

## Choosing and Configuring Audio Input Devices

Note that some special versions of Polycom PVX provide only the video portion of calls, while other devices handle audio. This section does not apply to these special video-only versions of Polycom PVX.

### Choosing an Audio Input Device

Polycom PVX offers you the flexibility of choosing from a number of different audio input devices. You can use the webcam's built-in microphone (if your webcam includes one), your computer's built-in microphone, an external analog microphone, or a headset.

The advantages and disadvantages of each of these audio input devices are listed in the following table:

Audio Input Device	Advantages	Disadvantages
Webcam's built-in microphone	<ul style="list-style-type: none"> <li>Does not require an external microphone</li> <li>Does not occupy additional desk space</li> <li>Distance between microphone and speakers is usually sufficient to avoid interference with audio quality</li> </ul>	<p>Some webcams may experience the following:</p> <ul style="list-style-type: none"> <li>Limited audio quality Audio is comparable to traditional telephone quality.</li> <li>Slower computer function The camera's built-in audio echo canceller may cause additional CPU load.</li> <li>Extended audio delay This is caused by the camera's built-in audio echo canceller. It results in a loss of synchronization between the video and audio, also known as a "lip sync" problem.</li> <li>Problems with the Windows® XP echo canceller This can be caused by routing audio input and output through different devices.</li> <li>Louder than expected far site sound</li> <li>Ineffective audio echo cancellation This occurs in calls using cameras with sensitive microphones (such as the Logitech QuickCam Pro 4000).</li> </ul>
Laptop computer's built-in microphone	<ul style="list-style-type: none"> <li>Does not require an external microphone</li> <li>Does not occupy additional desk space</li> </ul>	<ul style="list-style-type: none"> <li>Limited audio quality Audio is comparable to traditional telephone quality.</li> <li>Possible feedback or echo The structure of the laptop and low quality of most laptop speakers can cause problems that the Windows XP echo canceller cannot correct.</li> </ul>

Audio Input Device	Advantages	Disadvantages
External analog microphone	<ul style="list-style-type: none"> <li>Provides excellent synchronization when plugged into the same device as the speakers</li> <li>Connecting both the audio and video to the computer provides the best echo cancellation from the Windows XP echo canceller</li> <li>Provides maximum flexibility in the distance between the speakers and the microphone</li> <li>Offers a range of choices when selecting a high-quality microphone with good directionality and frequency response</li> </ul>	<ul style="list-style-type: none"> <li>Occupies additional desk space</li> <li>Limited audio quality</li> </ul> <p>The Windows XP echo canceller limits audio to 7 kHz. This is comparable to traditional telephone quality.</p>
Headset with microphone	<ul style="list-style-type: none"> <li>Full 14 kHz audio experience in some headsets, since no echo cancellation is required</li> <li>Provides a range of choices when selecting a high-quality microphone with good directionality and frequency response</li> <li>Provides maximum privacy</li> </ul>	<ul style="list-style-type: none"> <li>Limited audio quality in some headsets</li> </ul> <p>Cellphone and Bluetooth® headsets provide quality that is lower than wideband PVX audio and is comparable to traditional telephone quality.</p> <ul style="list-style-type: none"> <li>Possible discomfort of wearing a headset</li> </ul>

## Supported Headsets

These common headsets have been tested with Polycom PVX version 8.0.1 or later:

- GlobalMedia AMH-300V headset
- GN Netcom 2110-ST 01 USB headset
- Plantronics DSP-400 USB headset



When a headset is connected, the ring tone for incoming calls is played through the default Windows speakers.

## Configuring Audio Input Devices

After you connect your hardware, you need to specify the audio input and output devices in the Polycom PVX application.

### To specify the audio devices:

1. From the PVX Main page, select **Setup > Audio**.
2. Configure these settings:

Setting	Description
<b>Audio Output Device</b>	Select <b>Auto</b> to use the sound playback device specified in the Windows Sounds and Audio Devices control panel. Select <b>None</b> to use no audio output device.
<b>Audio Input Device</b>	Select <b>Auto</b> to use the sound recording device specified in the Windows Sounds and Audio Devices control panel. Select <b>None</b> to use no audio input device.
<b>Echo Cancellation</b>	Select <b>Internal</b> (when using Windows XP) to use the Windows XP echo canceller. Select <b>External</b> (when provided by external device) to use echo cancellation provided by another device. Select <b>None</b> to disable echo cancellation if you are using a headset.

## Using PVX with the Computer Calling Kit for SoundStation2 or SoundStation2W

The Computer Calling Kit allows you to make calls with PVX using a Polycom SoundStation2 or SoundStation2W phone. The minimum software requirements to use this kit are:

- SoundStation2 conference phone version SS2.CON.01.115 or later
- SoundStation2W conference phone version S2W.CON.01.2xx or later

### To use PVX with the Computer Calling Kit:

1. Install the Computer Calling Kit as described in the *Instructions for Computer Calling Kit* document, which you received with the kit.
2. From the PVX Main page, select **Setup > Audio**.
3. Configure these settings:

Setting	Description
Audio Output Device	Select your computer's sound card from the list.
Audio Input Device	Select your computer's sound card from the list.
Echo Cancellation	Select <b>External</b> .



# Troubleshooting

## Video

Symptom	Cause	Solution
The CPU usage is at or above 95% when PVX is sending video to the far site.	<p>This is normal operation.</p> <p>The desktop capture and encoder are busy running to provide the best desktop video quality.</p>	
Slow or freezing video.	The total CPU Load is too high.	<p>Adjust PVX to accommodate the video input device's high CPU usage. To do this:</p> <ol style="list-style-type: none"> <li>1. Go to <b>Setup &gt; Video &gt; Advanced</b>.</li> <li>2. Configure the setting correctly for your system and camera.</li> </ol> <p>For complete information about how to set these settings for your particular system and camera, refer to the <a href="#">Specifying Advanced Video Properties</a> section on page 4.</p>
	The system is less than a 2.0 GHz Pentium 4 or equivalent, and it is using most of its resources for media processing, leaving few resources for other applications.	<p>Adjust PVX to allocate fewer system resources to video processing. To do this:</p> <ol style="list-style-type: none"> <li>1. Go to <b>Setup &gt; General &gt; Performance</b>.</li> <li>2. To reduce the system resources allocated to video, select <b>Other Applications</b>.</li> </ol>
	<p>The device driver for the video capture device is using a high percentage of the CPU when the system is idle.</p> <p><b>Note:</b> This problem can occur with some USB 2.0 cameras.</p>	<p>Adjust PVX to allocate fewer system resources to video processing. To do this:</p> <ol style="list-style-type: none"> <li>1. Go to <b>Setup &gt; General &gt; Performance</b>.</li> <li>2. To reduce the system resources allocated to video, select <b>Other Applications</b>.</li> </ol> <p>Verify that you have the latest video capture drivers for your device.</p>
	Multiple USB cameras are connected to the computer.	Connect only one USB camera at a time to your computer.

## Audio

Symptom	Problem	Solution
Unable to access audio adjustment settings, such as the <b>Microphone Volume</b> slider on the <b>Setup &gt; Audio</b> page.	These adjustments are not available when the system is in a call.	Make audio adjustments when the system is not in a call and not muted.
The audio from a system using the computer's built-in microphone and a webcam is loud and distorted.	The microphone's audio gain is set too high.	Enable the <b>Automatic Gain Control</b> setting on the <b>Setup &gt; Audio</b> page. If this does not work, clear the <b>Automatic Gain Control</b> check box. Then click the <b>Calibrate Microphone</b> button and manually adjust the gain control using the <b>Microphone Volume</b> slider.
Far-site participants hear an echo.	The volume is too loud.	Reduce the volume.
	The microphone and speakers are too close together.	Separate the microphone and speakers as far as possible.
	The microphone's audio gain is set too high.	Go to <b>Setup &gt; Audio</b> and enable <b>Automatic Gain Control</b> .
	If you use a laptop's integrated speakers with the laptop's integrated microphone or with a webcam's microphone, the structure of the laptop computer and the quality of the laptop speakers may cause problems that the Windows XP echo canceller cannot correct.	Connect external speakers and use them instead of the integrated speakers.
In a multipoint call, the audio from a Polycom PVX with a webcam sounds either too loud or too soft compared to the other sites in the call.	The microphone's audio gain is set too high.	Go to <b>Setup &gt; Audio</b> and enable <b>Automatic Gain Control</b> . Adjust the microphone manually. To do this: <ol style="list-style-type: none"> <li>1. Clear the <b>Automatic Gain Control</b> check box.</li> <li>2. Click <b>Calibrate Microphone</b>.</li> <li>3. Use the <b>Microphone Volume</b> slider to adjust the microphone.</li> </ol>

Symptom	Problem	Solution
The audio volume level increases or decreases slightly when you start the Polycom PVX application.	This is normal operation.	The audio returns to its normal level automatically.
When using a SoundStation2 or SoundStation2W with the Computer Calling Kit, the volume from the SoundStation2 or SoundStation2W is too loud or too soft.	The speaker volume is not adjusted correctly.	Adjust your Windows volume control settings: <ol style="list-style-type: none"> <li>1. Click <b>Start</b> and go to <b>Settings &gt; Control Panel &gt; Sounds and Audio Devices</b>.</li> <li>2. Click the Volume tab.</li> <li>3. In the Speaker Settings section, click <b>Speaker Volume</b>.</li> <li>4. In the Speaker Volume dialog box, adjust the volume, and then click <b>OK</b>.</li> <li>5. In the Device Volume section, click <b>Advanced</b>.</li> <li>6. Adjust the <b>Line In</b> volume, and then choose <b>Options &gt; Exit</b>.</li> </ol>
The audio is delayed (lip sync is off).	The camera is using a large percentage of the CPU. <b>Note:</b> This can happen with new cameras (such as the Logitech QuickCam Fusion or the Logitech QuickCam Pro 5000).	Determine whether the camera has built-in echo cancellation. If it does, disable echo cancellation using the camera's configuration software. If the camera is using other special features (such as face tracking), use the camera's configuration software to disable these features. If you are using Windows XP, you can use PVX internal echo cancellation instead. To do this, go to <b>Setup &gt; Audio</b> and set <b>Echo Cancellation</b> to <b>Internal</b> .

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